Q1

CREATE TABLE Employee (

ID INT PRIMARY KEY,

fname VARCHAR(50),

mname VARCHAR(50),

lname VARCHAR(50),

gender VARCHAR(10),

DOB DATE,

Address VARCHAR(255),

salary DECIMAL(10, 2),

supervisor\_id INT,

FOREIGN KEY (supervisor\_id) REFERENCES Employee(ID)

);

CREATE TABLE Dependent (

Name VARCHAR(100),

gender VARCHAR(10),

DOB DATE,

Relationship VARCHAR(50),

employee\_id INT,

FOREIGN KEY (employee\_id) REFERENCES Employee(ID)

);

CREATE TABLE Department (

ID INT PRIMARY KEY,

Location VARCHAR(255),

Name VARCHAR(100)

);

CREATE TABLE Project (

ID INT PRIMARY KEY,

Name VARCHAR(100),

emp\_id INT,

dept\_id INT,

FOREIGN KEY (emp\_id) REFERENCES Employee(ID),

FOREIGN KEY (dept\_id) REFERENCES Department(ID)

);

-- Insert Employees

INSERT INTO Employee (ID, fname, mname, lname, gender, DOB, Address, salary, supervisor\_id) VALUES

(1, 'John', 'A', 'Doe', 'Male', '1980-01-01', '123 Main St', 60000, NULL),

(2, 'Jane', 'B', 'Smith', 'Female', '1985-02-02', '456 Elm St', 75000, 1),

(3, 'Alice', 'C', 'Johnson', 'Female', '1990-03-03', '789 Oak St', 80000, 1),

(4, 'Bob', 'D', 'Brown', 'Male', '1975-04-04', '101 Pine St', 55000, 2),

(5, 'Charlie', 'E', 'Davis', 'Male', '1988-05-05', '202 Maple St', 90000, 3);

-- Insert Dependents

INSERT INTO Dependent (Name, gender, DOB, Relationship, employee\_id) VALUES

('Emily Doe', 'Female', '2010-01-01', 'Daughter', 1),

('Michael Smith', 'Male', '2012-02-02', 'Son', 2),

('David Johnson', 'Male', '2014-03-03', 'Son', 3),

('Sophia Brown', 'Female', '2016-04-04', 'Daughter', 4),

('James Davis', 'Male', '2018-05-05', 'Son', 5);

-- Insert Departments

INSERT INTO Department (ID, Location, Name) VALUES

(1, 'New York', 'HR'),

(2, 'Los Angeles', 'Engineering'),

(3, 'Chicago', 'Sales'),

(4, 'Houston', 'Marketing');

-- Insert Projects

INSERT INTO Project (ID, Name, emp\_id, dept\_id) VALUES

(1, 'Project Alpha', 1, 1),

(2, 'Project Beta', 2, 2),

(3, 'Project Gamma', 3, 3),

(4, 'Project Delta', 4, 4),

(5, 'Project Epsilon', 5, 2);

SELECT

P.Name AS ProjectName,

D.Name AS DepartmentName,

E.fname AS FirstName,

E.lname AS LastName,

E.salary AS Salary

FROM

Project P

JOIN

Employee E ON P.emp\_id = E.ID

JOIN

Department D ON P.dept\_id = D.ID

WHERE

E.salary = (

SELECT MAX(E1.salary)

FROM Employee E1

JOIN Project P1 ON E1.ID = P1.emp\_id

WHERE P1.ID = P.ID

);

+-------------+

| Department |

+-------------+

| ID (PK) |

| Location |

| Name |

+-------------+

|

Controls |

|1

|

N

|

+-------------+

| Project |

+-------------+

| ID (PK) |

| Name |

| emp\_id (FK) |

| dept\_id (FK)|

+-------------+

|

|

|

|

+-------------+

| Employee |

+-------------+

| ID (PK) |

| fname |

| mname |

| lname |

| gender |

| DOB |

| Address |

| salary |

| supervisor\_id (FK) |

+-------------+

|1

Supervision |

|N

|

+-------------+

| Dependent |

+-------------+

| Name |

| gender |

| DOB |

| Relationship|

| employee\_id (FK) |

+-------------+

Q2

CREATE TABLE employee ( id INT AUTO\_INCREMENT PRIMARY KEY, name VARCHAR(100), occupation VARCHAR(100), working\_date DATE, working\_hour INT );

INSERT INTO employee (name, occupation, working\_date, working\_hour) VALUES ('John Doe', 'Engineer', '2024-06-01', 8), ('Jane Smith', 'Manager', '2024-06-02', 9), ('Alice Johnson', 'Clerk', '2024-06-03', 7), ('Bob Brown', 'Analyst', '2024-06-04', -5), -- Intentional negative value ('Charlie Davis', 'Technician', '2024-06-05', 10);

DELIMITER $$ CREATE TRIGGER before\_employee\_insert BEFORE INSERT ON employee FOR EACH ROW BEGIN IF NEW.working\_hour < 0 THEN SET NEW.working\_hour = 0; END IF; END$$ DELIMITER ;

INSERT INTO employee (name, occupation, working\_date, working\_hour) VALUES

('Test User', 'Intern', '2024-06-06', -4);

SELECT \* FROM employee;